LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claim 1 (Original)

A receiver providing a demodulated output including a demodulated digital bit stream from a received discrete multi-tone modulated input signal, the input signal received from a communication channel having noise thereon, the input signal having modulated thereon a digital bit stream, the receiver comprising:

first and second data paths coupled to receive the input signal;

the first of the two data paths comprising a first stage having a frequency response for applying a discrete Fourier Transform to the input signal and further comprising a frequency domain equalizer having an input coupled to an output of the first stage;

the second of the two data paths comprising a window stage for suppressing side lobes of the frequency response of the first stage; and

a logic stage for selecting an output from the first data path or the second data path based on a predefined test and for providing a selected output representing the demodulated digital bit stream.

Claim 2 (Currently Amended)

The receiver of claim 1, further comprising a decision feedback ~~feed-back~~ equalizer in said second data path having as an input an output from said window stage and for cancelling inter-bin interference created by said window stage.

Claim 3 (Original)

The receiver of claim 2, wherein the decision feedback equalizer receives a feedback signal from an output of said logic stage to cancel the inter- bin interference.

Claim 4 (Original)

The receiver of claim 3, further comprising a slicer stage having as an input the output of said logic stage and providing as an output the demodulated digital bit stream; said demodulated digital bit stream being provided as said feedback signal.

Claim ~~5~~ 18 (Currently Amended)

~~The receiver of claim 1;~~ A receiver providing a demodulated output from a received discrete multi-tone modulated input signal, the input signal received from a communication channel having noise thereon, the input signal having modulated thereon a digital bit stream, the receiver comprising:

first and second data paths coupled to receive the input signal;

the first of the two data paths comprising a first stage having a frequency response for applying a discrete Fourier Transform to the input signal and further comprising a frequency domain equalizer having an input coupled to an output of the first stage;

the second of the two data paths comprising a window stage for suppressing side lobes of the input signal; and

a logic stage for selecting an output from the first data path or the second data path based on a predefined test and for providing a selected output representing the demodulated digital bit stream;

wherein the window stage in said second path comprises a time domain window stage.

Claim ~~6~~ 19 (Original)

The receiver of claim ~~5~~ 18, wherein said time domain window stage has an input directly from a time domain equalizer.

Claim ~~7~~ 20 (Previously Presented)

The receiver of claim ~~6~~ 19, further comprising a second stage for performing a discrete Fourier transform in said second data path, the second stage having an input receiving an output from said time domain window stage.

Claim 21 (Original)

The receiver of claim 20, further comprising a decision feedback equalizer in said second data path having an input from said second stage and having an output provided to said logic stage.

Claim 22 (Original)

The receiver of claim 21, wherein the decision feedback equalizer receives a further input from said first stage.

Claim 5 (Original)

The receiver of claim 1, wherein said window stage in the second data path comprises a frequency domain window stage.

Claim 6 (Original)

The receiver of claim 5, further comprising a decision feedback equalizer in said second data path having an input receiving an output from said frequency domain window stage, said decision feedback equalizer being provided for cancelling inter-bin interference created by the frequency domain window stage; an output of said decision feedback equalizer being provided to said logic stage.

Claim 7 (Currently Amended)

The receiver of claim 6, ~~further~~ wherein the decision feedback equalizer has a further input from said first stage.

Claim 8 (Original)

The receiver of claim 7, wherein a feedback signal is provided from an output of said logic stage to said decision feedback equalizer to cancel inter-bin interference created by said frequency domain window stage.

Claim 14 (Previously Presented)

The receiver of claim 13, wherein the logic stage provides an output to a slicer stage, the slicer stage providing said demodulated digital bit stream as an output, said feedback signal comprising the demodulated output.

Claim 15 (Original)

The receiver of claim 10, wherein said frequency domain window stage has an input coupled to an output of said first stage.

Claim 16 (Original)

The receiver of claim 1, wherein the logic stage selects an output from the first data path or the second data path based on determining which data path provides more bits per symbol or has a higher signal to noise ratio.

Claim 17 (Currently Amended)

The receiver of claim 16, wherein if a tie occurs ~~in the event of a tie~~, the logic stage selects the first data path.

Claim 18 (Original)

The receiver of claim 1, wherein the window stage comprises one of a Hanning window function, a rectangular window function, a ~~DPS~~ window function, a Bartlett window function and a window function having a finite number of frequency domain coefficients.

Claim 19 (Previously Presented)

The receiver of claim 5, wherein the time domain window stage performs time domain pulse shaping by a sample-by-sample multiplication of the output from a time domain equalizer by window coefficients defining a time domain window function of the time domain window stage.

Claim 20 (Original)

The receiver of claim 10, wherein the frequency domain window stage performs frequency domain pulse shaping on a bin-by-bin basis by performing a linear combination of bin outputs and frequency domain window coefficients defining a frequency domain window function of the frequency domain window stage.

Claim 21 (Original)

The receiver of claim 1, wherein the frequency domain equalizer comprises a one-tap per-bin equalizer.

Claim 22 (Original)

The receiver of claim 1, further comprising a time domain equalizer having as an input the input signal received from the communication channel, the time domain equalizer having an output provided to the first and second data paths.

Claim 23 (Original)

The receiver of claim 10, wherein the window stage has an input from an output of the frequency domain equalizer.

Claim 24 (Currently Amended)

A method of providing a demodulated output including a demodulated digital bit stream from a received discrete multi-tone modulated input signal, the input signal received from a communication channel having noise therein, the input signal having modulated thereon a digital bit stream, the method comprising the steps of:

providing the input signal to first and second data paths;

applying a discrete Fourier Transform to the input signal in the first data path to generate a first transformed signal and frequency domain equalizing the first transformed signal to provide a frequency domain equalized signal;

suppressing side lobes of the frequency response of the first transformed signal by applying a window function in the second data path ~~by applying a window function~~ to provide a pulse shaped signal; and

selecting an output from the first data path or the second data path based on a predefined test and providing a selected output representing the demodulated digital bit stream.

Claim 25 (Currently Amended)

The method of claim 24, further comprising the step of performing decision feedback ~~feed back~~ equalizing in said second data path on said pulse shaped signal for cancelling inter-bin interference created by said window function.

Claim 26 (Previously Presented)

The method of claim 25, further comprising during the step of decision feedback equalizing, the step of providing a feedback signal comprising a selected output to cancel the inter- bin interference.

Claim 27 (Currently Amended)

The method of claim 26, further comprising the step of slicing the selected output and providing a sliced output as the demodulated digital bit stream; said demodulated digital bit stream being provided as the ~~said~~ feedback signal.

Claim 28 (Currently Amended)

~~The method of claim 24,~~ A method of providing a demodulated output from a received discrete multi-tone modulated input signal, the input signal received from a communication channel having noise therein, the input signal having modulated thereon a digital bit stream, the method comprising the steps of:

providing the input signal to first and second data paths;

applying a discrete Fourier Transform to the input signal in the first data path to generate a first transformed signal and frequency domain equalizing the first transformed signal to provide a frequency domain equalized signal;

suppressing side lobes of the input signal by applying a window function in the second data path to provide a pulse shaped signal; and

selecting an output from the first data path or the second data path based on a predefined test and providing a selected output representing the demodulated digital bit stream;

wherein the step of suppressing side lobes by applying a window function in said second path further comprises the step of applying a time domain window function.

Claim 42 (Original)

The method of claim 41, wherein said step of applying a time domain window function comprises applying a time domain window function directly to said input signal.

Claim 43 (Original)

The method of claim 42, further comprising performing a discrete Fourier transform in said second path to provide a second transformed signal, after said step of applying a time domain window function.

Claim 44 (Previously Presented)

The method of claim 43, further comprising the step of performing decision feedback equalizing in said second data path on said second transformed signal.

Claim 45 (Original)

The method of claim 44, further comprising using said first transformed signal during the step of decision feedback equalizing.

Claim 33 (Previously Presented)

The method of claim 24, wherein said step of applying a window function in the second data path further comprises the step of applying a frequency domain window function.

Claim 34 (Currently Amended)

The method of claim 33, further comprising the step of performing decision feedback equalizing in said second data path on said pulse shaped signal, said step of performing decision feedback equalizing being provided for cancelling inter-bin interference created by the frequency domain window function; and providing a decision feedback equalized signal for the step of selecting ~~selection as~~ an output signal.

Claim 35 (Original)

The method of claim 34, further comprising using the frequency domain equalized signal during said step of decision feedback equalizing.

performing

Claim 36 (Currently Amended)

The method of claim 35, further comprising providing a feedback signal during said step of performing decision feedback equalizing to cancel inter-bin interference created by said frequency domain window function.

Claim 37 (Previously Presented)

The method of claim 36, further comprising the step of slicing the selected output into ~~a~~ the demodulated digital bit stream, said feedback signal comprising said demodulated digital bit stream.

Claim 38 (Original)

The method of claim 33, further comprising applying the frequency domain window function to said first transformed signal.

Claim 39 (Original)

The method of claim 24, wherein the step of selecting an output from the first data path or the second data path comprises selecting an output based on determining which data path provides more bits per symbol or has a higher signal to noise ratio.

Claim 40 (Currently Amended)

The method of claim 39, wherein if a tie occurs ~~in the event of a tie~~, the step of selecting an output comprises the step of selecting the first data path.

Claim 41 (Original)

The method of claim 24, wherein the window function comprises one of a Hanning window function, a rectangular window function, a ~~DPS~~ window function, a Bartlett window function and a window function having a finite number of frequency domain coefficients.

Claim 42 (Original)

The method of claim 28, wherein said step of applying a time domain window function comprises time domain pulse shaping by a sample-by-sample multiplication of the time domain equalized signal by window coefficients defining the time domain window function.

Claim 43 (Original)

The method of claim 33, wherein the step of applying a frequency domain window function comprises frequency domain pulse shaping on a bin-by-bin basis by performing a linear combination of bin outputs and frequency domain window coefficients defining the frequency domain window function.

Claim 44 (Original)

The method of claim 24, wherein the step of frequency domain equalizing comprises frequency domain equalizing using a one-tap per-bin equalizer.

Claim 40 (Original)

The method of claim 24, further comprising time domain equalizing the input signal received from the communication channel to produce a time domain equalized signal, and providing the time domain equalized signal to the first and second data paths.

Claim 35 (Original)

The method of claim 28 further comprising applying the window function to the frequency domain equalized signal.